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Co-operative education: A value-added approach to education at the university level.

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CO-OPERATIVE EDUCATION: A VALUE-ADDED APPROACH TO EDUCATION AT THE UNIVERSITY LEVEL

by

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ABSTRACT

Co-operative education strategies at the baccalaureate level may allow for the contextualization of the learning process by utilizing experiential learning and career exploration. This study sought to examine the level of career-clarity or decisiveness with which students enter university, to see if the intervention of participation in a co-operative education program had an impact on the student's level of career-clarity, and if this impact could be linked to student academic performance and persistence rates.

A pretest posttest design was used for the two groups of students (Co-op participants, and non-Co-op participants). A volunteer sample of 166 subjects (from Business Administration and Engineering streams) participated in the study. A general student information sheet, the Career Decision Scale, Holland's Vocational Preference Inventory, and a career-related intervention treatment were used to build profiles of the students. Relevant aspects of these profiles were compared pretest and posttest. Of particular interest was the relationship between co-op participation and academic performance including student retention in good academic standing.

The findings of the study provide information for university administrators and educators concerning the importance of career-clarity, and the impact this "clarity" has on student performance, leading to persistence and increasing retention in the student population. This focus on increasing student retention rates may lead to greater recognition by university administrators of the benefits provided by educational strategies such as co-operative education. Appreciation of these benefits as a value-added approach to education, may provide the impetus to ensure a commitment for the enhancement and growth of co-operative education initiatives at the university level.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

A. General Statement of the Problem

Co-operative education strategies at the baccalaureate level may allow for the contextualization of the learning process by utilizing experiential learning processes and career exploration. The ability to apply theoretical knowledge is critical to the success of graduates today. Co-operative education allows for the integration of academic studies with work-related, or career-related experiences throughout a specified degree program. Proponents of co-operative education view this as an exercise allowing for the enhancement of the academic experience by extending the classroom.

Recent research on cognitive thought and intelligence theory suggest that the brain is better able to look at parts as they relate to the whole, creating associations and relationships that promote the meaningfulness and retention of information. Key to this development in a student's educational experience is the ability to develop insights into career clarity or areas of vocational interest as they apply to an academic discipline. These insights may be woven into the university academic experience so that students making academic choices may be successful as judged by completion or graduation from the chosen area of study.

Students participating in the co-operative education experience may be at a significant advantage in that they actively apply the knowledge gained in the classroom to the real-world work place setting. This application brings a context or meaningfulness that cannot be taught, but must be experienced. Through this experiential process,

students are afforded another dimension through which they are able to make decisions concerning areas of study, and heighten their academic performance.

The University of Windsor currently provides co-operative education (co-op) opportunities in eight undergraduate degree programs (Business Administration, Business/Computer Science, Computer Science, Earth Sciences, Engineering, Environmental Biology, Kinesiology, and Master of Business Administration). These co-op opportunities integrate study and work semesters throughout the degree program. The educational process involved in co-op includes professional development workshops offered during study terms, onsite evaluation and monitoring by the co-op coordinator staff while the students are working, final evaluation of work performance by the employer, and submission of a work report and oral presentation at the completion of the work term to allow for the development of written and verbal communication skills.

This study seeks to examine the relationship between co-operative education and student academic performance as measured by student persistence in "good academic standing" at the university level. Additionally, the relationship between participation in a co-operative education program and the student's level of career-clarity is explained. The review of literature will examine the evolving role of the university today as it prepares graduates for the world outside the classroom, a consideration of the importance of multiple measures of intelligence, and examining how co-operative education may in fact have an influence on student academic success as measured by student retention.

B. Significance of the Proposed Study

Ideally the findings of the study will provide information for university

administrators and educators with a means to identify and counsel students to ensure their success throughout the academic period, and to increase student success as measured by retention rates. In addition, documenting the link between career-clarity and the enhancement of student retention rates, may lead to an increase in administrative funding of co-operative education initiatives. All of this information will ultimately benefit the university student by focusing attention on educational strategies like co-operative education, that work toward better preparing the student for their future upon graduation, incorporating the values, ethics, and demands of the world they face as adults, into the educational experience.

CHAPTER II

REVIEW OF THE LITERATURE

A. The Role of the University Today

The role or mission of the university has been primarily concerned with higher education, the encouragement and development of intellectual excellence, and the fostering of intelligent and sensitive citizenship (Barbeau, Bruce, Clake, Morgan, Patry, & Porter, 1997). Societal pressures have required that universities evolve in terms of accessibility and the embodiment of a broader mission statement. Evidence of this evolution was seen as early as October 1949 at the University of Toronto convocation, when Prime Minister Louis St. Laurent concluded that government provided financial support was necessary for universities to ensure they performed the many services required in the interest of our nation, and that higher education had evolved over time into a form of public entitlement, rather than a matter of privilege. Expectations of youth concerning the accessibility of obtaining a university education were evident in the marked increase in enrollment in Ontario universities from 64,200 in 1953, to a total reaching 216,000 in 1990 (McKillop, 1994). In addition to the impact of accessibility of education, the influence of our multi-cultural and information-driven society has had a profound effect on educational social imperatives (Harwell & Blank, 1997; Stasz, 1997). Knowledge can be acquired, processed, and communicated in ways which were previously unimaginable. Prominent sociologist Drucker claimed knowledge is the only meaningful resource in our society today (as cited in Bentley, 1996). Over the past decade, there has been a movement in Canada into a knowledge-economy, which has

pushed up the price of admission to the high-quality job market (Lewington, 1999). Stakeholders in the educational process: business leaders and politicians, educators, parents, and the students themselves, continued to debate the standards and outcomes of education in meeting the requirements of this knowledge-economy (Wagner, 1995).

Co-operative education initiatives may have provided the medium to combine different educational outcomes: experiential learning assisting students in grounding theoretical knowledge in practice, and linking study programs to focus areas and regional labour market demands (Mann, 1994; Weiss, 1982). Young and Levin (1998) asserted that schools like any organization were shaped by power relations; the final authority influencing most aspects of schooling rested with elected officials. Predicted shortages in specific employment fields led to political pressures on school boards to encourage student populations to consider these fields. Ontario business leaders stressed that Ontario universities were an absolutely crucial component of Ontario's economic future (Carrington, 1999). The increasing significance of public education on the social well-being and economic prosperity of the country has led to many school reforms (Bloom, 1991; Young & Levin, 1998). In the Ministry of Education discussion paper, Excellence in Education: High School Reform, one of the goals cited in high school reform was to provide students with the information they required to make appropriate educational and career choices (Ministry of Education, 1996). It was further stated that career education and work experiences may enhance students' understanding of the links between the knowledge of the classroom, and the employment skills necessary for their future plans. With intense global competition and phenomenal technological development many

school reforms in various countries including Canada have recommended closer links between school studies and work experiences (Brewer & Gray, 1997; Stasz, 1997).

Students enrolled in university have cited many reasons for pursuing a degree program including personal development and gaining specific knowledge of a field of study. Students have gained an appreciation of the link between university and employment, and the acquisition of job related skills (Bercuson, Bothwell, & Granastein, 1997). Contrary to this view, the historical function of a university was not at all vocationally oriented, but rather the belief was held that a broad liberal learning experience was the best possible preprofessional training (Lucas, 1996). Educational theorist Dr. Dewey recommended that any educational reform look to assimilation, rather than the polarization of pedagogical views. Further Dewey (1938) suggested that education must be based on the actual life experience of the individual to accomplish its purpose or goals. Although the traditional academically oriented mission statement of universities may not have addressed the more employment-related concerns of co-operative education, in the spirit of Dewey's philosophy, a liberal-minded university education has evolved so that an integral component of its mission included a goal to produce graduates who can think well, and work effectively (Kennedy, 1997; Mann, 1994; Stasz & Brewer, 1998; Stasz, Kaganoff, & Eden, 1994; Westberry, 1997).

B. Multiple Measures of Intelligence

What is learned, and how this learning is accomplished by means of co-operative education is not fully understood (Sheasby, 1991; Stasz & Brewer, 1998). As an educational initiative co-operative education has worked specifically toward the aims of

multiple intelligence theory (MI); learning was viewed as contextual. The educational goals of co-operative education focused on providing students with the opportunity for application of theoretical knowledge in practical settings. Gardner (1997) asserted that educators needed to agree that the goal of teaching was to facilitate understanding and to prepare students for the world beyond school.

The theory of multiple intelligences has proposed that each individual possesses several intelligences, and how an intelligence developed depended on how it had been nurtured (Chapman, 1993). Gardner (1983) identified seven intelligences in the theory of multiple intelligence; these seven intelligences were grouped into three categories: language-related intelligences, interpersonal and intrapersonal intelligences, and object-related intelligences. Language-related intelligences demonstrated the structure of individual languages and encompassed verbal/linguistic and musical/rhythmic intelligences. The person-related intelligences, interpersonal and intrapersonal, reflected the view of the self, expectations of others, and accepted cultural norms. The object-related intelligences, logical/mathematical, visual/spatial and bodily/kinesthetic, were subject to the structure and function of objects the individual had to work with to solve problems.

Gardner's theory emphasized the manner in which people demonstrated their abilities within, and between areas of intelligences (Hoerr, 1996). This theory sought to expand the view of human intelligence by proposing there are multiple ways of knowing and learning which blend to create an individual cognitive profile. Gardner described four stages of development, or factors in an individual's cultural environment that either

promoted or impeded growth of intellectual abilities: the first encounter, the employment, the formal education, and the embrace (Chapman, 1993).

Co-operative education initiatives have matched well with Gardner's description of the formal education stage described as the intellectual transition from learning by doing, with guidance, to basic problem solving. The fact that students work with master teachers was cited as the most critical element of this stage. Students were taught to understand the key concepts to apply problem solving skills. The last stage, called the embrace, was the acceptance or immersion into the intelligence. Students have gained a keen awareness of all the nuances and subtleties as learning was applied to more and more complex problems. Fogarty, Perkins, and Barell (as cited in Chapman, 1993) noted the highest refinement of any intelligence was evident when the ability to solve problems had evolved from within a topic or discipline, to its application in real life.

Chyczij (1995) found that researchers have begun to acknowledge the intelligent behaviour displayed outside of the classroom. MI theory has attempted to address this issue by promoting other human abilities and talents in addition to the linguistic and logical-mathematical intelligences traditionally focused on in the classroom setting. Sternberg (1996) stated that to be successfully intelligent one needed to think in three specific interrelated ways: analytically, creatively, and practically; the most successfully intelligent individual had a balance of all three aspects. A further assertion was that the intelligence schools most readily recognized may not necessarily be useful to students in their adults lives. Gardner (1983, 1991), Sternberg (1986), and Sternberg and Wagner (1986) stressed the importance of context in the development, assessment, and valuation

of intelligence. Scaglione (1997) in commenting on how the brain learns reported that recent findings in cognitive science have revealed that the brain processes whole and parts simultaneously, that the brain is constantly searching for connections and a context within which to ensure the association of these parts. Work experiences have been shown to enhance learning by allowing students to learn skills in context (Blank, 1997; Harwell & Blank, 1997; Landgren, 1993; Stasz, 1997; Stasz, Kaganoff, & Eden, 1994; Westberry, 1997). Blank (1997) further elaborated that schooling had become disconnected from life itself - a contrived experience. Landgren (1993) had written there was evidence of a growing respect for "hands-on" training in many educational endeavours; science educators have consistently included laboratory manuals with published science text. An impetus for school reform was cited as the need for schools to structure complementary school-based and work-based learning programs, to reflect the contextual nature of the skills required in the workplace (Stasz, 1997).

Fisher, Rubenson, and Schuetze (1994) reported that research done to examine the benefits of co-operative education by comparing co-operative education students with traditional students, using a survey approach, produced results which indicated co-operative education students seemed to enjoy more benefits from their education. These benefits related to educational choices, enhanced academic performance, a clearer career focus, and extended into the occupational realm to include reporting of improved employability, higher starting salaries, and greater job satisfaction after graduation. The report went on to state that more rigorous research found less conclusive results suggesting that perhaps co-op students entered the program with a different set of

attitudes which did not change over time. These findings of increased academic performance, as they relate to student retention due to participation in career-related interventions or initiatives such as co-operative education, have clearly piqued the interest of university administration.

Van Gyn, Cutt, Loken, and Ricks (1997) investigated the educational benefits accrued to students participating in co-operative education in a longitudinal study of 999 subjects from both co-operative and non-co-operative education programs at the University of Victoria and the University of British Columbia. Subjects were recruited from the Arts, Engineering, and Science programs, and matched on several variables. Initial pretesting of subjects occurred in the fall term of the academic year, and the second contact began 24 months after the initial testing (there was some variance in the timing of the second testing phase to ensure a relatively similar amount of academic experience had been achieved for each subject). The instrumentation used was an Objective Form (OT) of the College Outcomes Measure Program to measure the level of knowledge of the subjects in both the initial and second testing phases. This instrument was chosen because it assessed both process and content knowledge making it highly suitable for a longitudinal study. A smaller sub-sample of subjects (117 matched pairs) was selected from the larger sample after the second testing phase. This pairing or matching of subjects was based on the following variables: pretest score, academic discipline, gender, year of degree program entering the study, prior work experience, time spent in university from initial testing through second testing phase.

The results from the OT did not indicate a significant gain over time for the study subjects, but there was evidence of a statistically significant better performance on the posttest by the co-op group as compared with the non-co-op group. Additionally, although the entry level grade point average (GPA) was not used as a matching variable, from a statistical standpoint, the co-op group had a higher GPA than the non-co-op group, and this relationship was unchanged at posttest. The researchers state that although the results of the study were not strong enough to state that co-operative education participation was a more effective educational strategy as compared to the regular program, they did indicate that there was sufficient evidence to justify further study of the effects and benefits of co-operative education as they relate to educational competence (Van Gyn, Cutt, Loken, Ricks, 1997).

The problem of predicting success as measured by student retention, the degree to which students persist in university, has gained momentum for university administrators and educators as they attempt to deal with the high attrition rates in many educational systems (Livengood, 1992; Peterson & delMas, 1996). In a study of the effects of career testing and interpretation intervention on the retention and academic standing of first-year college students, researchers found that career clarity was related to retention and graduation in undergraduate students. The sample was comprised of two groups, 78 first-year students enrolled in five sections of a University of Maryland College Park orientation course during the fall 1994 semester, and another 71 students enrolled in five comparable sections of the same orientation course. Both groups, treatment and the non-treatment or comparison group, were subjected to a pretest to establish scores reflecting

career clarity; the treatment group was provided with a further career-related intervention in the form of a vocational interest inventory with in-class feedback sessions. Both groups received a posttest assessment for career clarity. The outcome variables studied were: academic retention, defined as enrollment throughout a given semester, and academic retention in good standing, defined as enrollment throughout a semester with no academic action taken as a result of that particular semester. Results of academic standing and retention were obtained through University records. The subjects ranged in age from 17 to 23, with a substantial number (93%) 18 years of age or under. Gender participation was comprised of 56% female; racial make-up of the students consisted of 76% White, 9% Black, 6% Asian American, 7% Hispanic, and 1% were race unknown. It was reported that the Treatment and Comparison (Non-Treatment) groups did not differ significantly by sex, age, or race. Although some limitations to the study were indicated due to poor response rate on the posttest measure, the findings of the study reported marked differences between the treatment and comparison groups on rates of retention in good academic standing for three semesters following the intervention (Boyd, Hunt, Hunt, Magoon, & VanBrunt, 1997) .

Other research focusing on the beliefs held by students in their ability to act or gather information on career related issues has shown a relationship between these beliefs and students who persist at obtaining their educational goals, or degree completion (Boyd et al., 1997; Peterson & delMas, 1996). A study was conducted with 418 underprepared students (underprepared defined as at risk for attrition), to determine if there was a relationship between career decision-making self-efficacy and persistence rates. The

study concluded that nontraditional students (adult learners) who sought a postsecondary education with the belief it would provide opportunities for employment and better careers were most likely to persist in their academic studies (Peterson & delMas, 1996).

The link between vocational clarity and academic performance has been documented in the research studies conducted by the Maryland Longitudinal Study (Maryland Longitudinal Study Steering Committee, 1990). The Maryland Longitudinal Study was a five-year study of 772 students enrolled at the University of Maryland in 1980 which focused on Holland's concept of vocational identity and sought to determine if a relationship existed between vocational identity and higher education outcomes. The study was composed of a randomly sampled Representative group which reflected the ethnic diversity of the campus, and a Black group composed of all Black students enrolled in the class of 1980 who agreed to participate. The study attempted to investigate the hypothesis that students who were sure of what they wanted to do vocationally would be motivated to perform well academically. The findings reported a statistically significant positive correlation between vocational identity and cumulative grade point average (GPA) for each year of the study. The researchers conducted further studies to examine extraneous variables which may have influenced this correlation including the reciprocal effect of GPA on vocational identity. They concluded that further research was required to examine the factors affecting vocational identity, and they suggested that faculty members can have a positive influence on the development of vocational identity, and higher levels of vocational identity may result in higher grades (Maryland Longitudinal Study Steering Committee, 1989).

Further analysis of the data collected from the Maryland Longitudinal Study found evidence of a relationship between low vocational identity and a low degree of persistence in the undergraduate experience. The study concentrated on examining vocational identity in terms of self-knowledge and self-understanding, (e.g. how an individual's developing interests and talents were matched with the world of work). The development of vocational identity was characterized in the study as a process that naturally interacted with the educational process of an undergraduate degree program. Specifically, the study examined the development of vocational identity in students who had matriculated at the University of Maryland College Park and graduated within five years. The study classified 169 subjects from the Representative Group, and 50 subjects from the Black Group, into four subgroups based on the level of their vocational identity at the end of the first, and fourth year of the undergraduate program as: vocationally underdeveloped, vocationally developing, vocationally clear, and vocationally regressive. Students whose vocational identity level was below average at the beginning and at the end of the degree program were categorized as vocationally underdeveloped. Vocationally developing students were described as those with a below average vocational identity upon entrance to college and an above average vocational identity upon completion. The vocationally clear students both entered and ended college with an above average vocational identity. The last subgroup or category, vocationally regressive students, entered college with an above average vocational identity, and ended with a below average vocational identity; the number of students from the Black Group that fell into this category was only six percent, which was considered too small for consideration

in the findings (Maryland Longitudinal Study Steering Committee, 1990).

The study used the vocational identity subscale of Holland, Daiger, & Power's, My Vocational Situation (MVS), to measure vocational identity. The subscale was composed of 18 true/false questions which focused on the degree of clarity and stability of a subject's self-awareness and understanding. Scores on the MVS vocational identity subscale for both the Representative Group and the Black Group were taken at two points, the spring of the freshman year, and the spring of their fourth year. Average MVS vocational identity scores were calculated by gender within each of the Groups, at the two points in time. Subjects in both Groups were then categorized according to where their vocational identity score fell, at or below the calculated mean, or above the mean, and this was done in the spring of first year and fourth year. Additionally, comparisons were made of the student prematriculation characteristics such as: sibship order, parental income and education level, SAT scores, high school rank, and cognitive habits exhibited in high school (Maryland Longitudinal Study Steering Committee, 1990).

The findings of the study included the following four profiles of the Representative Group: 30% of the students fell into the vocationally underdeveloped category; 17% were categorized as vocationally developing; 40% indicated a clear vocational identity at the end of their freshman year and at the end of four years; the smallest group, approximately 14%, was composed of the vocationally regressive students. The three profiles of the Black Group studied comprised: 32% vocationally underdeveloped students, their self-assessed vocational identity below average at both the end of their freshman year and their fourth year; 19% vocationally developing, indicated by poor self-

assessed vocational identity at the end of the freshman year, and four years later a clearer picture of their goals was found; 43% were vocationally clear students, exhibiting a relatively consistent well developed vocational identity throughout their degree program (Maryland Longitudinal Study Steering Committee, 1990).

The implications of the research suggested institutional resources in the form of concerned faculty and staff, and appropriate programming to assist in the development of vocational identity, may be essential aspects required for enhancement of the undergraduate experience and a method to increase the graduation rate of students (Maryland Longitudinal Study Steering Committee, 1990).

A study by Luzzo (1993) investigated Holland's concept of congruence, hypothesizing that congruent individuals, those possessing more mature vocational and career decision-making skills, would also possess greater academic skills. Holland (1973) asserted that an individual's vocational congruence was connected to a person's personality type which was related to the environment in which the person lived. This pairing of persons with environments may then lead to predictable outcomes which can include both vocational and educational achievement. Luzzo (1993) conducted a study of 401 undergraduates attending a large state university to evaluate the relationship between vocational congruence, GPA, career decision-making attitudes, and career decision-making skills. Although the expected relationship between congruence and career decision-making attitudes was revealed, congruence was not significantly associated with academic success. The findings of the study implied that an improved attitude towards the career-decision making process was reflective of a greater degree of confidence in

student career decisions, and this supported the need for career development programs that provided occupational opportunities for career exploration. The lack of a relationship between GPA and congruence suggested that students who were vocationally congruent, may not be prepared for the career decision-making process. The results of the study indicated the need for the design of career development programs at the postsecondary level to enhance student career decision-making skills and academic performance (Luzzo, 1993).

Santa Rita (1992) drawing from research on educational advising and student retention, proposed in addition to other factors such as consistent and accurate information on courses and curriculum requirements, and teaching students academic coping skills, educational advising should be career focused.

C. Models of Co-operative Education

LaGuardia Community College in New York has embraced the challenge of providing students with a career-focused education, the opportunity to learn in different ways, to connect school-based learning to its applications, and to explore occupational alternatives. This college was established in 1971, and from its inception, LaGuardia has been a mandatory co-op college in which all full-time students are required to enroll in co-operative education programs. The rationale of the co-op program at LaGuardia embraced the philosophy that learning takes place in many different settings, and was described in three statements of purpose: to explore and confirm career interests; to apply classroom learning in practical, or real-life settings; and to practice and strengthen transferrable or work-related skills (Grubb & Badway, 1998).

The framework of the LaGuardia model of co-operative education and that of the University of Windsor may be considered similar in that both required students to have participated in at least three 12-week paid co-op placements. Both institutions viewed co-operative education as a learning experience in which many different elements contributed to the overall learning that takes place. The University of Windsor and LaGuardia Community College have integrated professional development in their programs in the form of seminars or workshops which provide exploration of career-related issues. The primary focus of these seminars/workshops was to provide students with the opportunity to explore careers advancement and succession, and master skills and competencies common to all jobs.

Grubb and Badway (1998) cautioned that for any work-based component to be educationally sound and integrated, it needed to become so central to the educational process of the institution that it would be unthinkable to give it up. Universities have become more conscious of their vocational responsibilities than in the past. With this responsibility the integrity of a liberal education must remain protected, and the goal or mission of the university maintained so that students are afforded the opportunity to learn how to make a life, not how to make a living (Barlow & Robertson, 1994). Dewey's ideology declared that a liberal education must not be taught in a narrow decontextualized manner; co-operative education programs have attempted to ease graduates into the working world through the connection of theoretical and practical knowledge (Fisher et al., 1994).

Several studies have revealed numerous benefits to the major partners in the co-

operative education process - the students, the employers, the educational institution, and society itself. For the student there has been evidence presented that participation in a co-operative education program contributed significantly to the clarification of career goals, confidence in career choices, enhancement of academic performance, and persistence to graduation (Weiss, 1982).

D. Research Question and Hypotheses

Research Question

There is a belief that students should be encouraged to begin the career exploration process early in their undergraduate university years. Career-clarity is an important element in post secondary education in supporting student academic choices and performance. The primary focus of this study is to examine the relationship between participation in co-operative education and student academic performance.

The research question is: Does co-operative education affect student academic performance, and is this related to student measures of career-clarity?

Hypotheses:

1. Students participating in co-operative education will maintain their academic performance in "good standing".
2. Co-op students, regardless of faculty membership, will report higher levels of Certainty with regard to career/academic choices as measured by the Career Decision Scale.
3. Co-op students, regardless of faculty membership, will report lower levels of Indecision with regard to career/academic choices as measured by the Career Decision Scale.

CHAPTER III

DESIGN AND METHODOLOGY

A. Subjects

This study employed a convenience sample of all newly-admitted, first-year University of Windsor students in the four year Business Administration and Engineering Programs, scheduled to begin their degree programs effective September 1999. In July 1999 approximately 2,100 newly-admitted students attended the "Head Start" orientation program to register for the Fall 1999 semester. Due to the large number of program participants, a smaller group of students was selected at random to take part in the study. The sampling was done randomly by selecting 100 students from each program, Business Administration and Engineering, leading to a potential of 200 subjects.

During the academic counselling portion of the "Head Start" program, the research study was explained, participants were selected, and the testing instruments completed. The "Head Start" participants contacted were comprised of 315 Business Administration Students of which 77 chose to participate, and 117 Engineering new admissions, 79 of which participated. The engineering group demonstrated a stronger interest in participating in the study. To increase the number of participants in the study, further instruments were mailed to students wishing to participate. The resulting number of study participants by faculty was 81 Business new admissions, and 85 Engineering new admissions.

With regard to the male/female ratio, 30.72% of the sample was female, and 69.28% male. To compare gender and faculty a crosstabs procedure was run. This revealed a

significant difference in the two faculties, $\underline{X}^2$ (1) = 7.46, $\underline{p}$<.01, with a larger gap between males and females in Engineering (see Table 1). Also, students entering engineering were found to be older, $\underline{F}$ (1, 164) = 3.9, $\underline{p}$ = .05 (see Table 2). Further investigation determined that although a larger span of ages was evident in the Engineering Student group, this span was found to be attributable to two students who were over the age of 22, and their ages skewed the results.

The Business and Engineering faculties have similarities in the structure of their academic programs. The Business Program offered students a wide-range of focus areas including six major streams of study within the Bachelor of Commerce Program: Accounting, Finance, Management Science, Management and Labour Studies, Marketing, Policy and Strategy. Students self-select a major, and are able to begin this selective process in their second year of the degree program. Within the Business group of study participants, the majority of students were registered in the Bachelor of Commerce Program, Honours Business Administration program, but there were approximately six participants registered in associated programs: Business Computer Science Co-op program, and the Bachelor of Commerce, Honours Business Administration and Economics program. These student participants were included in the study as the first year of their degree programs were essentially the same as the Bachelor of Commerce, Honours Business Administration program.

The Engineering, Bachelor of Applied Science degree program offered seven streams of study including: Civil, Electrical and Computer, Environmental, Industrial,

Table 1

Breakdown of Sample by Faculty Participation and Gender

	Business Faculty		Engineering Faculty	
	Actual	%	Actual	%
Participation in study:	81	48.80%	85	51.20%
Gender:				
Male	48	28.92%	67	40.36%
Female	33	19.88%	18	10.84%

Notes:

1) % indicates the fraction of the total (166 study participants) that can be categorized into each faculty.

Table 2

Breakdown of Sample by Faculty and Age

	N	Mean	SD
Business Faculty	81	18.57	0.79
Engineering	85	18.91	1.33
Total	166	18.74	1.11

Mechanical, Mechanical with Materials Option, Mechanical with an Automotive Engineering Option. Students were registered in a "general" engineering program in their first year of study, and declare a major, or specific area of focus, within the engineering program at the start of their second year of study.

Both the Business and Engineering co-operative education programs have a selective admission process requiring the applicant to submit an application form and resume, and in the Business program students are also required to participate in an admission interview. However, there are significant differences in the Business and Engineering Co-operative Education Admission policies. The academic requirements differ by program as well as the entry point into the respective co-op program. In the Business program, students are admitted directly out of high school, or in the Fall semester of their first year of study. These Business students are active co-op participants, and are provided with employability skills training and professional development workshops. Students in the Engineering program do not actively participate in employability skills training or professional workshops until the Winter semester of their first year. Crosstabs data is shown which indicates the Business Co-operative Education Fall 1999 admissions (see Table 3), and those study participants identified as co-op or non-co-op participants by the start of the Winter 2000 (January 2000) semester (see Table 4).

B. Instrumentation

A general student information sheet (See Appendix H), two separate instruments, and a career-related intervention treatment were used in this study.

Table 3

Breakdown of Admission Statistics to the Business Co-op Program - Fall 1999 semester

	Business Faculty			
	Yes	%	No	%
Applied and Admitted to Co-op	35	43.21	46	56.80
Applied and not admitted to Co-op	20	24.70	61	75.31
Plan to re-apply to Co-op	17	20.99	64	79.01
Have not applied to Co-op	10	12.35	71	87.65

Notes:

1) % indicates the fraction of the total (81 study participants in the Business program)

Table 4

Breakdown of Total Sample:

Co-op Participation by Faculty (Business/Engineering), Winter 2000 Semester

		Identified as Co-op		Identified Non-Co-op	
	N	Yes	%	No	%
Business	81	32	39.50	49	60.50
Engineering	85	36	42.35	49	57.65

The general student information sheet was used to collect information indicating the study participant's name, student identification number, gender, age, faculty of study, co-operative education plans, part-time work history and plans, living accommodations during the school term, community involvement past and future, and involvement in athletics and sports, both past and while at school.

The first instrument, the Career Decision Scale (CDS), was used as the pretest and posttest instrument for both groups as a measure of the degree to which respondents reported individual career-related statements described them and their circumstances. The instrument measured the respondents' decidedness in implementing career choices, and comfort with academic majors. The CDS has received substantial research support for test-retest reliability, and for its construct and concurrent validity. As an instrument that is considered a valid and reliable measure of career indecision, that is also capable of measuring changes over time, it was found to be extremely suitable for the purposes of this research (Slaney, 1985).

The CDS instrument consists of 18 four-point Likert items (with 1 = not at all like me, and 4 = exactly like me), plus an open-ended item. This pen and paper inventory consisted of Items 1 and 2 which measured the degree of certainty (Certainty Scale), the degree of certainty a student felt about academic and/or career choices, and items 3-18 which measured career indecision (Indecision Scale). Scores on the CDS inventory were reported as percentiles (Maddox, 1997). High Certainty Scale scores indicated certainty of choice of career and school major; certainty scores at the 15th percentile or less, (in this study certainty scores at this percentile would be 3 or less), were considered

significant, suggesting that the student may have been uncertain about either career choice or academic major. Correspondingly, high indecision scales indicated indecision concerning career choice or academic major, scores equal to, or above the 85th percentile (in this study indecision scores of 36 or more), were to be considered significant, indicating severe indecision (Osipow, 1986). The open-ended item was an opportunity for students to clarify any additional information about career decision-making.

Research has demonstrated the scale's validity as well as its sensitivity in response to relevant changes following treatment intended to reduce career indecision (Boyd et al., 1997). Osipow (1986) reported in the Career Decision Scale Manual that two studies have reported test-retest correlations of .90 and .82 for the Indecision Scale for two separate samples of college students.

The second instrument used as a pretest for both groups was Holland's Vocational Preference Inventory (VPI). The VPI consisted of 160 occupations representing the six personality types; the theory stated that people would seek work environments similar to their personality type. The inventory based on Holland's career development theory uses scales of various dimensions utilized in many vocational assessment inventories including: Realistic, Investigative, Artistic, Social, Enterprising, Conventional, (the six main dimensions in Holland's theory), Self-Control, Masculinity/Femininity, Status, Infrequency, and Acquiescence. The VPI has undergone revisions and refinement to remove discriminatory scales, and gender-biassed occupational titles. A large body of research has supported the reliability and validity of the VPI instrument. Researchers have reported a strong association between interest in school subjects and vocational

interests (Drummond, 1986).

In the Vocational Preference Inventory Manual, Holland (1985) cited data which suggests the test-retest reliabilities for a sample of 115 college freshmen ranged from .54 to .80 with a median of .71. Holland further reported evidence concerning the validity of the VPI scales indicating the internal consistency of the scales to range from .81 to .91 and average .88. The VPI has been normed on diverse populations, and extensive data support the construct validity of the VPI scales (Psychological Assessment Resources, Inc.).

The career-related intervention was the co-operative education treatment. Only those students in the treatment group actively participated in the co-operative education program by attending all professional and employability skills training workshops and information sessions offered, and by actively competing with other co-op students in the Summer 2000 Co-op Job Competition to obtain a summer co-op work term placement. The job competition was held in the Winter 2000 semester and consisted of co-op students applying to various advertised jobs, attending any interviews granted, and successfully achieving a "match" with a co-op employer. At the completion of the job competition student/employer matches were made based on information provided by the student and the employer. Once a "match" was confirmed, students would have achieved placement status for the Summer 2000 co-op work term period.

The Business and Engineering programs differed slightly in the presentation and provision of the Co-operative Education Intervention. Specifically, the Business Administration Co-op Students were admitted (through a selective admission process),

paid co-op fees, and began the co-operative education treatment in full, in the Fall 1999 semester with professional development workshops. Engineering students were provided with the opportunity to apply to the Co-op Program in the Fall, but all Engineering students (co-op and non-co-op) were provided with a resume writing workshop only, in the Fall semester.

In the Winter 2000 semester, students in Business and Engineering that were selected to participate in co-op were allowed to compete in the Summer 2000 Co-op Job Competition; both groups received a program of employability and professional development training throughout the semester.

C. Design and Procedures

A pretest posttest group design was used for the two groups of students (Co-op participants, and non-Co-op participants). Both groups were selected from a systematic random sampling of first year, (Fall 1999) admissions to the Honours Business Administration and Engineering programs attending the "Head Start" program in July, 1999.

Each day during the period of July 14 through July 20, 1999, after the completion of the academic counselling session for the Business Administration and Engineering Programs, volunteers were selected for the study. The research study was introduced, volunteers sought, and the CDS and VPI instruments administered to the group of students who indicated they would participate in the study. Student participants were also asked to complete the General Information Sheet which provided various demographic and contact information, as well as obtained the subject signature to gather future

information from the subjects such as grades, and the post-test CDS.

Information concerning identification of students participating in co-operative educations programs in the Business Administration and Engineering programs was obtained from the Office of Co-op Education and Career Services in November 1999, and again in January 2000, to determine treatment (Group A) and non-treatment (Group B) student membership. Business Co-op Students were "officially" admitted (shown on the University's academic record), and participated in the co-operative education program effective the Fall 1999 semester; Engineering Co-op Students were not identified as participating actively until the Winter 2000 semester when they are allowed to participate in the Summer 2000 Co-op Job Competition, and in the employability and professional development workshops offered exclusively for this group.

In late February and during March 2000, attempts were made to contact the study participants to encourage them to complete the post-test CDS instrument. Professors from both the Business and Engineering Faculty were contacted, and requests were made for the researcher to visit classrooms at the end of lecture sessions to administer the instrument. Individual students were also contacted via email and the telephone to encourage their continued participation.

At the conclusion of each academic semester, the cumulative averages of the subjects in the treatment (Group A - Business and Engineering co-op), and non-treatment (Group B - regular Business and Engineering) groups were reviewed and recorded from the university records. This was done in January, 2000 and May, 2000.

The results of the pretest/posttest CDS scores were compared to student academic

performance measured at the end of the winter academic semester, May 2000. This comparison looked for any relationship between pretest/posttest scores and academic performance including student retention in good academic standing.

CHAPTER IV

ANALYSIS OF RESULTS

A. Data Analysis

Analyses of covariance (ANCOVA), were used to explain co-op effects on Career-clarity measures of Certainty and Indecision, and grades (academic performance). Multivariate analyses of variance (MANOVA) were also computed to examine faculty (Business, Engineering), gender (male, female), and VPI Scales (Realistic, Investigative, Artistic, Social, Enterprising, Conventional, Self-Control, Masculine/Feminine, Status, Infrequency, Acquiescence). Where appropriate, descriptive statistics such as arithmetic means and standard deviations were reported. Additionally crosstabs analyses of various subject characteristics were done, and Pearson Product Moment Correlations were computed for relevant variables.

The results of this study are reported in the following format:

1. Results of academic performance as measured by cumulative averages reported for the Fall 1999 (January 2000), and Winter 2000 (May 2000) semesters. This variable was studied in relation to the following independent variables: faculty membership and co-op/non-co-op participation.
2. Results of differences in levels of career-clarity and indecision as indicated by the Career Decision Scale pretest and posttest scores related to faculty and co-op/non-co-op group membership.
3. Additional findings and significant correlations found between variables.

B. Examining the Relationship between Co-operative Education and Student Grades

What is of interest in this study is the impact of Co-op experience (participation) on student academic performance or achievement (final cumulative average as at May 2000), and Career-Clarity (Certainty and Indecision). However, as entry into the co-op programs was somewhat contingent upon adequate achievement levels, the co-op effects may have been confounded with initial achievement level differences. To control for this possibility, the initial grade level (Fall 1999 cumulative average) was entered into the analyses as a covariate for the following dependent measures: Final Grades (cumulative average as at May 2000), CDS - Certainty, and CDS - Indecision.

Preliminary analysis indicated that the gender variable was not significant and so this variable was deleted from the analyses. First, a two-way analysis of covariance (ANCOVA) was computed for Final Grade, with Faculty (Business, Engineering) and Co-op (yes, no) as the independent variables. This revealed a significant effect for the covariate, F (1,161) = 310.41, p <.001, a significant main effect for Faculty, F (1,161) = 5.84, p <.05, due to higher grades in the Business faculty and a significant main effect for Co-op, F(1,161) = 4.03, p<.05, due to higher grades for students in co-op regardless of controls for initial grade level differences. Thus, Final Grades (as at May 2000), were higher for Co-op Students even with controls for initial group differences. This suggests a favourable co-op effect on achievement. Means and standard deviations are reported in Table 5.

C. Career Decision Scale (CDS) Certainty and Indecision Pretest and Posttest Scores

Preliminary tests of the CDS Certainty Pretest and Posttest scores showed no main

Table 5

Means and SD for Business and Engineering

Co-op and Non-Co-op Participants for Grades

	Co-op - No		Co-op - Yes	
	Mean	SD	Mean	SD
Fall 1999 Cumulative Averages (13.0 Scale)				
(As at January 2000)				
Business	6.56	2.79	9.29	1.76
Engineering	3.75	2.60	9.18	2.03
Winter 2000 Cumulative Averages (13.0 Scale)				
(As at May 2000)				
Business	5.68	3.07	8.46	2.26
Engineering	3.50	2.80	9.27	2.02

effect or interaction effect for gender. Moreover, gender showed only six females in the Co-op Engineering Group. Therefore, the gender variable was removed from the analysis. A two-way analysis of covariance (ANCOVA) was computed for the CDS - Certainty. Independent variables were Faculty (Business, Engineering), and Co-op (yes, no). Both initial achievement levels and initial CDS - Certainty levels were entered as covariates in an effort to control for initial group differences. The two-way ANCOVA for CDS - Certainty revealed a significant effect for the achievement level covariate, F $(1,160) = 16.42$, $p < .001$, and a significant effect for the CDS - Certainty pretest covariate, F $(1,160) = 4.38$, $p < .05$. In addition, there was a significant Co-op effect, F $(1,160) = 4.63$, $p < .05$, due to higher levels of CDS - Certainty in Co-op Students following co-op participation. Means and standard deviations are reported in Table 6.

Similar to the CDS Certainty Score testing, preliminary tests of the CDS Indecision Pretest and Posttest scores showed no main effect or interaction effect for gender, and therefore, the gender variable was removed from the analysis. Next, a two-way analysis of covariance (ANCOVA) was computed for CDS - Indecision Scores. Independent variables were Faculty (Business, Engineering), and Co-op (yes, no). Both initial achievement levels and initial CDS - Indecision levels were entered as covariates in an effort to control for initial group differences. The two-way ANCOVA for CDS - Indecision scores revealed a significant effect for the achievement level covariate, F $(1,160) = 15.79$, $p < .001$, and a significant effect for the CDS -Indecision pretest covariate, F $(1,160) = 9.45$, $p < .01$. However, in this analysis there was no Co-op effect or Faculty effect, $p > .1$. Means and standard deviations are reported in Table 7.

Table 6

Means and SD for Business and Engineering

Co-op and Non-Co-op Participants on the Certainty Scale of the CDS

	Co-op Participation			
	No		Yes	
	Mean	SD	Mean	SD
Certainty - Pretest				
Business	5.61	1.26	6.44	1.34
Engineering	5.90	1.50	5.92	1.38
Certainty - Posttest				
Business	4.55	2.54	6.38	1.43
Engineering	3.02	3.13	5.97	1.68

Table 7

Means and SD for Business and Engineering

Co-op and Non-Co-op Participants on the Indecision Scale of the CDS

	Co-op Participation			
	No		Yes	
	Mean	SD	Mean	SD
Indecision - Pretest				
Business	34.59	8.49	27.66	7.06
Engineering	31.82	8.55	31.50	9.59
Indecision - Posttest				
Business	27.61	15.91	30.47	9.42
Engineering	16.73	17.60	29.58	8.60

D. Additional Findings, Significant Correlations

A series of crosstabs analyses of various subject characteristics such as age, gender, part-time employment history and plans, community involvement, and athletic/sports involvement were done (see Table 8). These results did not indicate any significant differences between the faculty participants.

Study participants were also tested during the pretest process using the Vocational Preference Inventory (VPI). A 2x2x11 MANOVA, was computed with Faculty (Business, Engineering), Gender (male, female), and VPI Scale (Realistic, Investigative, Artistic, Social, Enterprising, Conventional, Self-Control, Masculine/Feminine, Status, Infrequency, Acquiescence), as the independent variables. This analysis revealed a main effect for Gender, F (11, 152) = 2.85, $p<.01$, and a main effect for Faculty, F (11,152) = 26.15, $p <.001$. The means and standard deviations are shown on Table 9.

The univariate analysis for Gender revealed differences on the Conventional Scale ($p<.05$), and on the Masculine/Feminine Scale ($p<.001$). The interpretation of these results within the VPI typology framework indicated a significant difference in self-reporting of typology, with the Female population of the sample reporting a higher level of conventional approach to vocational choice, and a higher level of masculine approach to vocational choice of occupation. Holland (1985) interpreted females with a high masculine/feminine score as more likely to choose occupations traditionally dominated by males.

Table 8

Sample Descriptive Data

	Business	Engineering	X^2	(df)	p
Current Part-time Employment					
Yes	56	56	0.200	(1)	>.1
No	25	29			
Future Part-time Employment					
Yes	43	37	1.517	(1)	>.1
No	38	48			
Residence					
At Home	41	51	2.017	(2)	>.1
Residence	32	26			
Off Campus	7	5			
Past Community Involvement					
Yes	47	48	0.041	(1)	>.1
No	34	37			
Present Community Involvement					
Yes	47	37	3.486	(1)	= .06
No	34	48			
Past Athletic Involvement					
Yes	43	45	0.000	(1)	>.1
No	38	40			
Present Athletic Involvement					
Yes	30	31	0.006	(1)	>.1
No	51	54			

Notes:

1) As seen in Table 8, the variable - Present Community Involvement, is moving in the direction of significance. This difference may indicate a possible trend. Theoretically if a larger sample was used a significant difference may be found between community involvement of business and engineering students.

Table 9

VPI Descriptive Data

	Business				Engineering			
	Male		Female		Male		Female	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Realistic	43.27	6.82	44.79	3.76	53.61	9.51	56.11	9.98
Investigative	42.69	4.52	43.09	7.01	49.06	9.11	50.72	9.88
Artistic	44.06	6.06	42.00	5.99	43.72	6.20	42.78	8.08
Social	42.38	5.06	41.88	8.62	40.81	5.44	38.11	4.84
Enterprising	50.71	7.66	53.24	8.49	40.75	6.18	42.78	6.57
Conventional	51.69	8.40	56.82	9.55	44.63	7.03	45.83	4.84
Self-Control	53.67	9.47	53.88	7.92	49.03	10.28	47.89	11.50
Masculine/Feminine	47.60	8.71	52.85	8.70	54.96	6.67	61.39	8.15
Status	46.83	11.35	47.82	9.32	44.72	6.69	45.67	8.87
Infrequency	53.96	10.81	58.30	8.32	53.63	10.19	51.89	6.28
Acquiescence	43.44	8.16	43.73	8.89	41.07	9.39	43.00	9.37

The univariate analysis for Faculty revealed significant differences on all scales, $p<.05$, except the Artistic Scale, the Status Scale, and the Acquiescence Scale. As seen in Figure 1, Engineering participants reported higher scores on the Realistic, Investigative, and Masculine/Feminine scales; Business participants reported higher scores on the Social, Enterprising, Conventional, Self-Control, and Infrequency scales.

Correlational Analysis

Several interesting significant correlations were found between the variables studied (see Table 10). Often there were significant correlations with grades in both the Fall and Winter semesters.

A strong correlation between academic performance at the conclusion of both the Fall 1999 and Winter 2000 semesters, was as expected ($r = .89$). More interestingly, grades correlated with posttest scores for the Certainty ($r = .62$) and Indecision ($r = .534$) scales on the CDS, and Participation in Co-op ($r = .61$).

Grades also correlated with four scales on the Vocational Preference Inventory. There were positive correlations with the Self-Control and Infrequency scales. Thus, those higher on these two scales tended to have higher grades. The fact that grades were negatively correlated with the Realistic and Acquiescence scales indicated that students higher on these two scales tended to have lower grades.

Strong positive correlations were found for the CDS Certainty and Indecision posttest scores for the entire sample. Additionally, positive correlations were reported for Certainty and Indecision posttest scores and Co-op Participation.

Figure 1

Means Reported by Faculty for Vocational Preference Inventory Scales

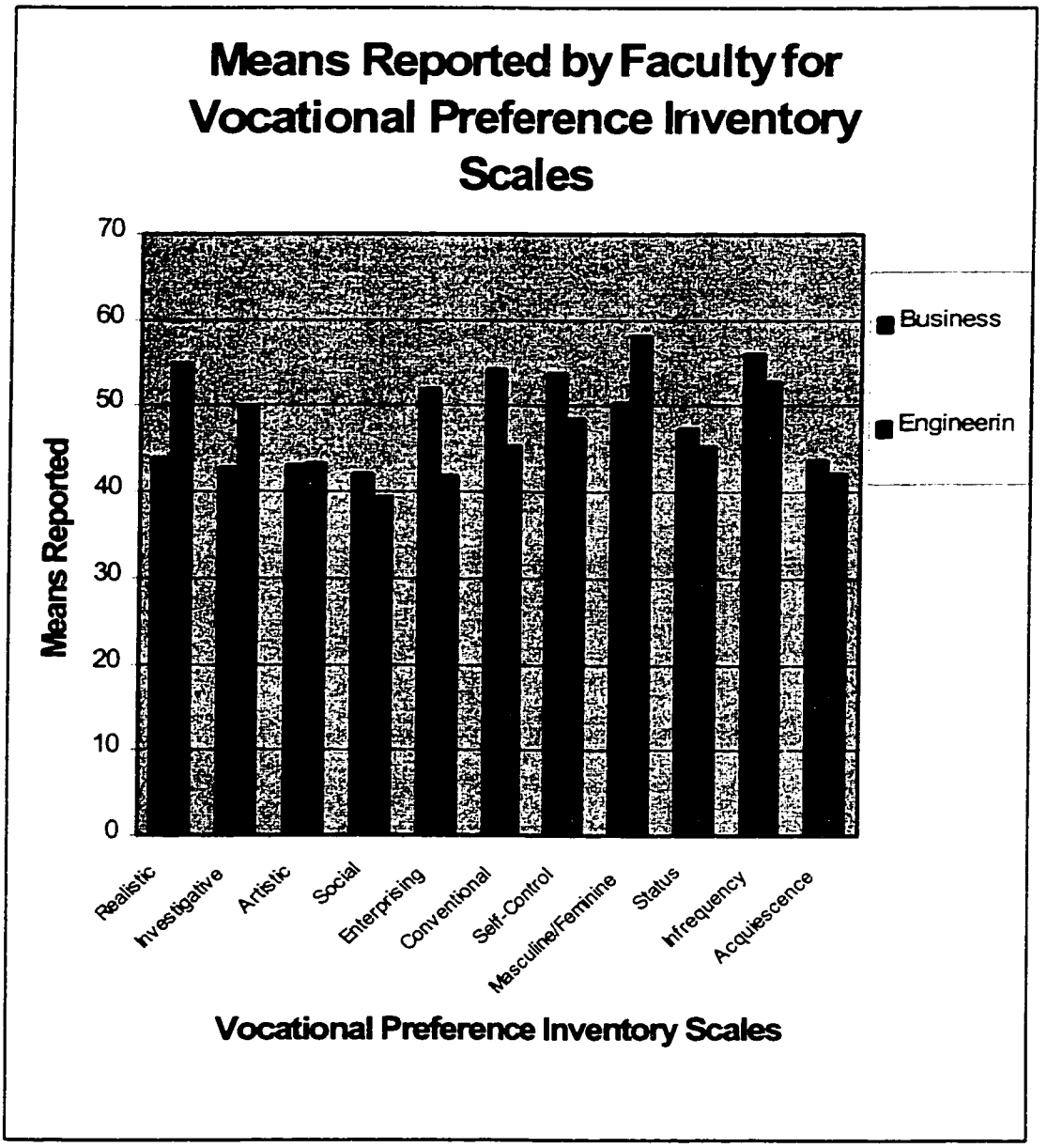

Table 10

Significant Correlations For Total Sample

	Winter 2000 Cum. Avge. (May/00)	Fall 1999 Cum. Avge. (Jan/00)	CDS Certainty Posttest	CDS Indecision Posttest
Winter 2000 Cum. Avge. (May/00)	1.000	.890**	.624**	.534**
Fall 1999 Cum. Avge. (Jan/00)	.890**	1.000	.517**	.448**
Certainty - Posttest	.624**	.517**	1.000	.613**
Indecision - Posttest	.534**	.448**	.613**	1.000
Co-op Participant - Winter 2000	.609**	.609**	.429**	.255**
Vocational Preference Inventory Scale:				
Realistic	-.206**	-.211**	-.207**	-.143
Conventional	.080	.170*	.122	.141
Self Control	.181*	.214**	.203**	.053
Infrequency	.174*	.194*	.136	-.019
Acquiescence	-.172*	-.137	-.143	.036

Note: Findings of significant correlations reported.

*$p<.05$

**$p<.01$

Small but significant correlations were found for two of the VPI scales and the Certainty posttest scores. A positive correlation was found for the Self-Control scale and Certainty posttest score, and a negative correlation was found for the Realistic scale and the Certainty posttest scores.

A further breakdown and comparison of the significant correlations between variables was done by Faculty (see Table 11). As expected strong positive correlations were found in the Faculty breakdown for grades at the conclusion of both academic semesters in each Faculty. Similarly, positive correlations for the Certainty Posttest scores and grades were found in both faculties.

Significant correlations for the two faculties were similar for the most part, however, they did appear to be stronger generally for the Engineering Group. The Engineering participants reported a strong positive correlation between Indecision scale posttest scores and grades at the conclusion of both semesters. The strong positive correlation between Certainty and Indecision posttest scores for this Faculty was interesting in that the expected inverse relationship between these scales was again not evident. The Engineering Group also reported much stronger positive correlations between Co-operative Education participation and academic performance, and Certainty and Indecision posttest scores.

Table 11

Significant Correlations by Faculty

	May Cumulative Average	January Cumulative Average	Certainty Posttest	Indecision Posttest
January Cumulative Average				
Business	.881**	1.000	.464**	.295**
Engineering	.902**	1.000	.514**	.496**
Certainty - Posttest.				
Business	.590**	.464**	1.000	.367**
Engineering	.633**	.514**	1.000	.747**
Indecision - Posttest				
Business	.389**	.295**	.367**	1.000
Engineering	.616**	.496**	.747**	1.000
Co-op Participant - Winter 200				
Business	.444**	.484**	.383**	.102
Engineering	.755**	.753**	.491**	.405**

Note: Findings of significant correlations reported:

*p<.05

**p<.01

CHAPTER V

DISCUSSION

A. Research Findings

The research supported the first hypothesis which stated that students participating in co-operative education would maintain their academic performance in "good standing". In both the Business and Engineering degree programs, students were required to maintain a minimum of a 5.0(C-) cumulative average to continue in "good academic standing" in their respective degree programs. For the purposes of this study, student retention or persistence was measured based on the attainment of, and maintenance of, "good academic standing" by the student participant. Both co-operative education programs required students to maintain a higher academic standard than the general program, with both the Business and Engineering co-op programs requiring a 6.0 cumulative average to remain academically eligible for the co-operative education option of the degree program. There were further academic requirements for the co-operative education programs, but these were not of comparative value, and therefore not included in the study (e.g. Business co-op students must maintain an 8.0 major average, and in both co-op programs, students may not have more than one outstanding failure on their academic transcript).

The Business participants reported slightly higher academic averages in both pretest and posttest measures. This difference may have been attributable to differences in curriculum, number of courses taken over the two semester period, (Business students usually taking 10 courses, whereas Engineering students usually take 12 courses over the

same period), variance in credit weighting of the courses reflected in the cumulative averages (Business courses are uniformly weighted at 3.0, whereas the Engineering courses have a variety of course weights ranging from 2.00 to 4.50). Although a slight variance in academic mean was reported for pretest/posttest results in the Business participants, the Engineering group of participants as a whole reported stable academic performance over the two semester period.

The study found that the co-op participants, regardless of faculty membership out performed their non-co-op counterparts. The difference was significant for both faculties with the Engineering faculty reporting the highest degree of difference in overall performance; Engineering co-op participants reported an overall cumulative average of 9.23 (mean), whereas the non-co-op participants reported an overall cumulative average of 3.62 (mean).

The ANCOVA computed to control for the possible confound effect of initial achievement differences for co-op and non-co-op students, supported the hypothesis that co-op participation has a favourable effect on student academic performance or achievement. The findings of this analysis confirmed that for the research study participants, final grades were higher for Co-op students even with controls for initial group differences. This finding supports the presumption that co-operative education participation is associated with higher academic performance. Critical to this examination was the variable of career-clarity, as measured by reported levels of certainty and indecision on the Career Decision Scale, and the effect this may have had on student academic performance. This effect was evident in the significant, ($p<.05$), findings

indicating high levels of certainty, pretest and posttest, for both Business and Engineering co-op participants, and lower levels of certainty both pretest and posttest for both faculty non-co-op participants. Further, an ANCOVA computed to control for initial group differences found a significant Co-op effect with higher levels of Certainty reported by the Co-op Students. The research hypothesis which stated students participating in Co-operative Education would show a greater degree of Certainty was also supported.

The Certainty Scale measured the degree of certainty the respondent felt in having made a choice for an academic major or a career; a high score indicated a high level of career-clarity or certainty with regard to this choice. Both of the academic degree programs participants in this study were enrolled in offered a "general" first academic year to provide students with an introduction to the broader academic discipline before focusing more specifically on an area of specialization within the business/engineering streams respectively. In effect, the first year of study at the University of Windsor provided study participants in both programs, co-op and non-co-op, the opportunity to be affiliated with a specific faculty as their area of academic choice, and a substantial spectrum of career choices within these programs. This opportunity while providing many options, may have been proactive in allowing for the exploration and enhancement of career-clarity in some participants, or may have lead to dissonance or further confusion of career-clarity for others.

Additionally, the fact that Business co-op participants presented similar responses in both pretest/posttest measures may have been indicative of the fact that this group received a co-operative education treatment via employability training and professional

development from the start of the Fall 1999 semester onwards.

Although there was a small difference in reported levels of certainty in the pretest for the Business co-op and non-co-op groups, the Engineering faculty respondents, both co-op and non-co-op, indicated a similar pretest level of certainty. This may suggest new admissions to the Engineering faculty began their first year of study with a high level of certainty concerning their academic and/or career choices. Admission criteria from high school to these faculties may have played a role as there are differences in course requirement prerequisites. The Business faculty requires students to have completed six Ontario Academic Credits including English I and one mathematics course. The Engineering faculty admission requirements are somewhat more focused on a particular area of academic performance and include the same requirements as the Business faculty with the additional requirements of Calculus, Algebra and Geometry, Chemistry, and Physics. The Engineering faculty respondents differed quite markedly in the posttest reported levels of certainty, particularly the non-co-op Engineering group indicating a much lower level of certainty in the posttest. There may be some relation between this finding and that of academic performance for the Engineering group (Fall 1999 cumulative average - 3.75 mean; Winter 2000 cumulative average - 3.50 mean). Since the students were not randomly assigned to the co-operative education condition, we cannot conclude that the effect was due to co-op participation. What is evident however, is that outside of co-op participation, certainty deteriorates over time, and even more so for the Engineering Students.

The findings of this study did not support the third research hypothesis that co-op

students, regardless of faculty membership, would report lower levels of Indecision. The Engineering faculty reported lower levels of posttest indecision, with a dramatic difference between the reported means for co-op participants (29.58), and non-co-op participants (16.73). This finding does not support the anticipated inverse relationship between the Certainty and Indecision Scales, with both levels of certainty and indecision declining in the posttest responses of the Engineering non-co-op group. By including overall academic performance into this perspective, it may be possible to infer that this group, Engineering non-co-op participants, may have reassessed their academic future and made decisions to pursue an alternate choice of major and/or career, and this may have resulted in their self-rating of less indecisiveness concerning career/academic choices.

Participation by co-op students in the Summer 2000 job competition may have also been a factor that played a role in the co-op participant unchanged levels of posttest indecision. Through this job competition process, students were required to actively compete for available positions by submitting applications (resumes and cover letters), and attending any interviews granted. This process can be highly selective and competitive, and most students do not achieve a co-op placement until the end of the term, or into the summer months. Although an optimal learning ground, the harsh realities of the employment marketplace may be discouraging to the novice co-op participant. Some of the co-op participants may have become discouraged at the lack of immediate success, and this may then have been translated into their responses on the posttest indecision scale, reporting a higher degree of indecision concerning career-

clarity. A further posttest after completion of the summer co-op work term may be more indicative of the participant reported levels of indecisiveness.

Significant Correlations with Vocational Preference Inventory

Using Holland's Vocational Preference Inventory to examine relationships in reported areas of vocational choice with the other variables studied revealed interesting correlations. Holland's theory asserted that most people possess aspects of all the Personality Types he proposed, but that an individual would behave in a manner reflecting one or two styles more strongly than others (Osipow, 1965). For the purpose of this study, the underlying contention that Holland's theory permits prediction about career and academic major choices that an individual with a certain typology would gravitate towards, was interesting in the context of the significant correlations found. Further, these results are relevant to the study participants' educational behaviour, in that Holland (1973) asserted that choice of, and achievement in a field of study, followed the same rules as vocational behaviour.

Realistic Scale

Holland (1973) stated this personality type had a preference for activities that entailed ordered and systematic manipulation of objects, tools, machines, etc. As would be expected, the study findings indicated a higher overall reporting of Realistic vocational choice for the Engineering group participants than the Business group. Further Holland stated that high scores on the Realistic Scale would be assumed to resemble the realistic personality, and the choice of major or field for this type would include Engineering.

Social Scale

The Social personality type was characterized as sociable, cheerful, adventurous, and dominant. These individuals report a high self-rating of leadership, speaking skills, and practical mindedness (Osipow, 1968). The Business faculty participants reported higher levels on this scale which can be attributed to the career-profile of individuals seeking an occupational role which reinforces the need to relate, manipulate, and train others (Holland, 1973).

Enterprising Scale

The Business faculty participants reported significantly higher scores than the Engineering participants on the Enterprising scale. High scores in this personality type prefer social interaction and activities that include the manipulation of others to attain professional or economic goals (Holland, 1973). This finding supports Holland's assertion that the area of major academic choice for the Enterprising personality type would be Business Administration.

Conventional Scale

This personality type was associated with individuals who were conforming, orderly, and practical. High scorers on this scale were also seen as being cautious, and their values including a strong need and identification with power, money and status. The Business participants scored significantly higher on this scale than the Engineering group, indicating for this group of study participants, that the Business participants were more business-achievement oriented (Holland, 1985).

Masculine/Feminine Scale

There were significant differences by Faculty in participant reporting of this personality type; the Engineering faculty participants scored significantly higher. High scores on this personality type are associated with traditionally masculine occupational roles (Holland, 1985). This finding was as expected as the Engineering career choice is one which is identified as a male profession, or a profession commonly preferred by men. This finding is reflected in the recruitment activities for the Engineering faculty at the University of Windsor which since 1994, has annually offered the President's National Alumni Incentive Scholarship ($1,000.00) to each new female student admission in an effort to increase female enrolment in Engineering.

B. Limitations of the Design

The major limitation of the study may be that the subjects could possibly differ from one another in ways that are related to one of the variables being studied - career clarity. Subjects may have brought with them personal motivation or career related experience which enabled them to clarify their career goals and focus them academically. The Co-operative Education participants appeared to have entered into their first academic year with higher levels of career-clarity, and whether or not this was indicative of personal maturity, self-assessment, or prior learning, was not clear. These students may have brought with them an awareness or focus which impacted on the choices they made, and their persistence in meeting these goals.

There may also have been a weak threat to the study due to the maturational growth in the subjects caused by their participation in a university academic program.

This growth may have had an impact on the degree of career clarity reported in the posttest instrumentation for some study participants.

Another factor that may have limited the study was the cross-referencing of the Business and Engineering faculties. Each of these groups had a different method and time-frame for application and admittance to their respective co-operative education programs. The Business group had a significantly longer co-operative education treatment, were admitted into the co-operative education program immediately upon entering the University, and paid co-op fees from the Fall 1999 semester onward. The Engineering students had a significantly different experience in that some were invited to participate earlier, but none of the students in Engineering were allowed to actively participate in the co-op program until the start of the Winter 2000 semester. Additionally these students were not "officially" admitted into the Engineering Co-op program until they had successfully achieved a co-op placement for the Summer 2000 work term, and only then did they begin to pay co-op fees. The payment of co-op fees may have had an impact on the motivation of the student, along with a longer period of co-op involvement (ie. employability and professional development training).

Another limitation was in the efforts to receive responses, and in promoting willingness among the non-treatment group to participate in the posttest instrumentation. Flexibility and availability of the researcher was necessary to ensure a proactive approach in reaching these subjects and keeping them involved.

C. Recommendations

The findings of this study strongly support the view of Co-operative Education as

a "value-added" approach to education at the University Level, and the underlying need and importance of educational strategies that enhance the academic process. Co-op participants in the study overall reported higher academic performance than the non-co-op participant group. Further it was found that overall, the Certainty scale scores were relatively stable in each Faculty for the co-op participant groups, but that they did decline significantly for the non-co-op participants over time. These findings were supportive of the assertion that the co-operative education treatment and higher academic scores (student persistence and retention), were related. The research conducted by the Maryland Longitudinal Study Steering Committee (1989), also noted there may be extraneous variables which can influence a correlation or reciprocal effect of GPA on vocational identity; higher levels of vocational identity may result in higher grades.

To determine the degree of effect Co-operative Education has on academic performance and student retention rates, a longitudinal approach to this research may be required. This may provide more conclusive evidence of the impact of co-operative education. The student participants in this study had not yet actually had the "field experience" associated with co-operative education, and this may in fact have lead to even greater cognitive gains, and career-clarity. Yongue, Todd, and Burton (1981) asserted that field exposure career training is an effective method for improving and developing career maturity. Further investigation by these researchers also led to a belief that the positive affect of this type of training may serve to motivate cognitive learning (Yongue, Burton, & Todd, 1983). A study of these participants after the completion of their first co-op work term placement may yield significantly stronger results with regard

to career-clarity and the effect this may have on academic performance as seen through student persistence rates.

As universities strive to offer an enriched academic environment, co-operative education may be seen as a tool, or strategy useful in enhancing the performance and satisfaction of the student consumer. Shofield (1999) stated that there is no doubt of the impact of experiential learning in revitalizing university instruction. He further asserted that co-operative education may in fact provide the "ticket" for academic enrichment which can provide graduates of today a "front-line" entrance into our seemingly borderless, technologically advanced, knowledge based economy.

CHAPTER VI

APPENDIXES

A. Definition of Terms

To facilitate an understanding of this examination, the following terms are defined:

Academic Performance: measured by cumulative GPA at the end of each academic semester

Career Clarity: a measure of career decisiveness or direction

Co-operative Education Program: a degree program at the baccalaureate level that integrates study and work semesters and includes professional development workshops, and opportunities to develop skills in verbal and written communication skills

Co-operative Education Student: any student participating in an accredited co-op program, for this study specifically students in the four year Business Administration and Engineering co-op programs

GPA: cumulative grade point average assessed at the completion of each academic semester. At the University of Windsor academic grades are recorded on a 0.0 - 13.0 scale as follows: A+ = 13, A = 12, A- = 11, B+ = 10, B = 9, B- = 8, C+ = 7, C = 6, C- = 5, D+ = 4, D = 3, D- = 2, F = 1, F- = 0

Personality Type: Holland's vocational personality typology: Realistic, Investigative, Artistic, Social, Enterprising, Conventional, Masculinity-Femininity, Status, Infrequency, Acquiescence (See Table 12).

Student Retention/Persistence: completion of at least two academic semesters in good academic standing

Table 12
Holland's Vocational Personality Typology

Personality Type	Conceptual Definition
Realistic	Practical, masculine; mechanical and technically competent.
Investigative	Intelligent, rational; scientifically inclined.
Artistic	Artistic interests; imaginative, sensitive.
Social	Sociable, sensitive, value social achievement; ability to relate well to others.
Enterprising	Dominant, sociable, adventurous; strong leaders.
Conventional	Practical, persistent; value financial and business success.
Masculinity-Femininity	Shrewd, unsociable; frequent choose traditional masculine occupational roles.
Status	Sociable, enthusiastic, expressive; competencies include leadership, sales, educational, governmental, business, and clerical, want to be important.
Infrequency	Not industrious, low aspiration level; preference for low status occupations.
Acquiescence	Dominant, enthusiastic, many interests; prefer many occupational roles.

Notes: These descriptions apply to high scores of on these personality scales (Holland, 1985).

Vocational Interest: sureness or confidence in one's vocational plans, interest in a specific vocation or field of work

Vocational Congruence: the relationship between work environment and person; strong congruence indicated by the situation in which a personality type matches the work environment, (e.g. a realistic person in a realistic environment)

Work Environment: six kinds of environment (to be compared/matched with personality typology): realistic representative occupations such as architecture, engineering, trades, machinist, forest ranger; investigative representative occupations such as physicist, anthropologist, chemist, mathematician, and biologist; artistic representative occupations such as poet, novelist, musician, playwright, and composer; social representative occupations such as professor, psychologist, counsellor, and missionary; enterprising representative occupations such as manager, salesperson, politician, and lawyer; conventional representative occupations such as accountant, bookkeeper, administrative assistant, and postal clerk (Hellriegel, Slocum, & Woodman, 1992)

B. Business Co-op Employability Skills Workshops

Fall 1999 - Tentative Workshop Schedule 08/23/99
Year 1 Business Administration Co-op

Two Time Slots: * two sessions each Monday except as noted

Year 1 Surname (A-K): Mondays 10:00am - 11:00am

Mon. Sep. 20/99 10:00 am - 11:00am	Welcome to Co-op DH 351	Karen Roland
Mon. Sep 27/99 10:00 am - 11:00am	Study Skills DH 351	Tania Dawes
Mon. Oct 4/99 10:00 am - 11:00am	Self-Assessment DH 351	Career Placement Coordinator
Mon. Oct 25/99 10:00 am - 11:00am	Resume/Cover Letter DH 351 *have students sign up for ASI (only 31 slots available per date/time)	Career Placement Coordinator
Mon. Nov 8/99 10:00 am - 11:00am	ASI Training Odette Building Rm. 210 *sign up sheet	Karen Roland
Mon.Nov 15/99	Resume Critiques - online resumes must be submitted online on or before November 15/99	Karen Roland

Year 1 Surname (L-Z): Mondays 12:00pm - 1:00pm * except as noted

***Wed. Sep. 22/99 12:00pm - 1:00pm**	Welcome to Co-op DH 351	Karen Roland
Mon. Sep 27/99 12:00pm - 1:00pm	Self-Assessment DH 351	Career Placement Coordinator
Mon. Oct 4/99 12:00pm - 1:00pm	Study Skills DH351	Tania Dawes
Mon. Oct 18/99 12:00pm - 1:00pm	Resume/Cover Letter DH 351 *have students sign up for ASI (only 31 slots available per date/time)	Career Placement Coordinator
Mon. Nov 8/99 12:00pm - 1:00pm	ASI Training Odette Building Room 210 *sign up sheet	Karen Roland
Mon. Nov 15/99	Resume Critiques - online resumes must be submitted online on or before November 15/99	Karen Roland

For New Year 1 & Year 2 Fall 1999 Admissions to the Business Co-op Program:

Friday, Sep 24/99 12:00-12:30pm	Welcome to Co-op DH 351	Karen Roland

One additional ASI Training Slot:

Monday, Nov 15/99 10:00 am - 11:00am	ASI Training Odette Building Rm. 210 *sign up sheet - 31 spots	Karen Roland

TO: Year 1 Business Administration Co-op Student
RE: WELCOME TO CAMPUS - Winter 2000 STUDY SEMESTER

I hope that you have had a successful fall term, and I look forward to seeing you on campus this Winter study semester! Our first meeting is scheduled for Friday, January 7th, 2000, dependent on your surname, please see the tentative schedule below:

Winter 2000 - *Tentative* Workshop Schedule - Year 1 Business Administration Co-op

If your surname begins with the letters, A-K, please follow this schedule: *FRIDAYS 12:30PM - 1:30PM*

Friday, January 7/00 12:30 - 1:30pm	Welcome Back DH 351	Karen Roland
Friday, January 14/00 12:30 - 1:30pm	Interview Skills DH 351	Co-op Education & Career Services
Mock Interviews (January 17 - 31)	Mock Interviews Individual 30 minute appointments sometime between (January 17 - 31) *students will sign up for this at the Friday January 14th meeting Mock Interviews will be held in the Co-op Office, Room 111 Dillon Hall	Co-op Education & Career Services
Friday, March 17/00 12:30 - 1:30pm	Report Writing DH 351	Academic Writing Centre
Friday, March 31/00 12:30 - 1:30pm	Presentation Skills DH 351	Karen Roland
Friday, April 7/00 12:30 - 1:30pm	Successful Co-op Work Term DH 351	Karen Roland

If your surname begins with the letters, L-Z, please follow this schedule: *FRIDAYS 1:30 - 2:30PM*

Friday, January 7/00 1:30 - 2:30pm	Welcome Back DH 351	Karen Roland
Friday, January 14/00 1:30 - 2:30pm	Interview Skills DH 351	Co-op Education & Career Services
Mock Interviews (January 17 - 31)	Mock Interviews Individual 30 minute appointments sometime between (January 17 - 31) *students will sign up for this at the Friday January 14th meeting Mock Interviews will be held in the Co-op Office, Room 111 Dillon Hall	Co-op Education & Career Services
Friday, March 17/00 1:30 - 2:30pm	Report Writing DH 351	Academic Writing Centre
Friday, March 31/00 1:30 - 2:30pm	Presentation Skills DH 351	Karen Roland
Friday, April 7/00 1:30 - 2:30pm	Successful Co-op Work Term DH 351	Karen Roland

C. Engineering Co-op Employability Skills Workshops

Engineering Co-op Program - Winter 2000 Study Term - 2003 Engineering Co-op Grads

January 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4 Classes Begin	5 11:30-12:20 Group 1 3:30-4:20 Group 2 Co-op Participants Announced	6	7	8
9	10	11	12 11:30-12:20 Group 1 3:30-4:20 Group 2 Summer 2000 Job Competition	13 1st Posting 1st ROUND BEGINS	14	15
16 1st Posting Electronic Apps DUE by midnight	17 2nd Posting *1st Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice*	18	19 2nd Posting Electronic Apps DUE by midnight 11:30-12:20 Group 1 3:30-4:20 Group 2 Interview Skills	20 3rd Posting *2nd Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-op Office*	21	22
23 3rd Posting Electronic Apps DUE by midnight	24 4th Posting *3rd Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice*	25	26 4th Posting Electronic Apps DUE by midnight	27 5th Posting *4th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice*	28	29
30 5th Posting Electronic Apps DUE by midnight	31 6th Posting *5th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice*					

Engineering Co-op Program - Winter 2000 Study Term - 2003 Engineering Co-op Grads

February 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 1st Round Interview Period BEGINS	2 6th Posting Electronic Apps DUE by midnight	3 7th Posting 6th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	4	5
6 7th Posting Electronic Apps DUE by midnight	7 7th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	8	9	10	11	12
13	14	15	16 11:30-12:20 Group 1 3:30-4:20 Group 2 Success in the Workplace	17 1st Round Interview Period ENDS	18 A.M. - Students Pick-up Employer Rankings 12:00 Noon - Students Rankings DUE	19
20	21 1st Round Placements Announced - Students will be EMAILED Slack Week	22 Slack Week	23 Slack Week	24 Slack Week	25 University Offices Closed Slack Week	26
27	28	29				

Engineering Co-op Program - Winter 2000 Study Term - 2003 Engineering Co-op Grads

March 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 11:30-12:20 Group 1 3:30-4:20 Group 2 1st Round letters & Make-up workshop	2 1st Posting 2nd ROUND BEGINS	3	4
5 1st Posting Electronic Apps DUE by midnight	6 2nd Posting 1st Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	7	8 2nd Posting Electronic Apps DUE by midnight 5:30-7:00 Harassment in the Workplace - 104 Odette	9 3rd Posting 2nd Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	10	11
12 3rd Posting Electronic Apps DUE by midnight	13 4th Posting 3rd Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	14	15 4th Posting Electronic Apps DUE by midnight 5:30-7:00 Health & Safety - 104 Odette	16 5th Posting 4th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	17	18
19 5th Posting Electronic Apps DUE by midnight	20 6th Posting 5th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	21	22 6th Posting Electronic Apps DUE by midnight 5:30-7:00 ISO 9000 - 104 Odette	23 7th Posting 6th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	24	25
26 7th Posting Electronic Apps DUE by midnight	27 8th Posting 7th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	28	29 8th Posting Electronic Apps DUE by midnight 5:30-7:00 Tech Rep Writing - 104 Odette	30 9th Posting 8th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice	31	

Engineering Co-op Program - Winter 2000 Study Term - 2003 Engineering Co-op Grads

April 2000

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2 *9th Posting Electronic Apps DUE by midnight*	3 10th Posting *9th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice*	4	5 10th Posting *Electronic Apps DUE by midnight* 11:30-12:20 Group 1 3:30-4:20 Group 2 Job Search Tech - 351 DH	6 11th Posting *10th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice*	7	8
9 *11th Posting Electronic Apps DUE by midnight*	10 Classes End *11th Posting Cover letters / App forms if applicable DUE by 12:00 noon in Co-opOffice*	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

D. Summer 2000 Co-op Job Competition Schedule

UNIVERSITY OF WINDSOR — COOPERATIVE EDUCATION PROGRAM
SUMMER 2000 WORK-TERM INFORMATION

Telephone: (519) 253-3000 Fax: (519) 973-7046

CO-OP EDUCATION				
DIRECTOR: Dana Tonus ext. 3484				
CO-OP SECRETARIES: Melora Correa ext. 2508 Gina Alb ext. 3903				
COORDINATORS:				
Lori Handsor ext. 2577 Engineering	Karen Roland ext. 3562 Business Env. Biology	Lisa Antaya ext. 3893 MBA Human Kinetics	Michelle Watters ext. 3898 Co-op Coordinator	Kate Scanlan ext. 3558 Business/Comp. Science Computer Science Earth Science

	JOB POSTED	JOBs ON-LINE DEADLINE (by midnight)	APPLICATION FORMS AND COVER LETTER DEADLINE* (by 12:00pm - noon)
1st Posting	Thursday, January 13	Sunday, January 16	Monday, January 17
2nd Posting	Monday, January 17	Wednesday, January 19	Thursday, January 20
3rd Posting	Thursday, January 20	Sunday, January 23	Monday, January 24
4th Posting	Monday, January 24	Wednesday, January 26	Thursday, January 27
5th Posting	Thursday, January 27	Sunday, January 30	Monday, January 31
6th Posting	Monday, January 31	Wednesday, February 2	Thursday, February 3
7th Posting	Thursday, February 3	Sunday, February 6	Monday, February 7

*Application forms and cover letters are only required when specified in the job description

Interviews to be conducted:	Tuesday, February 1 - Thursday, February 17
Student rankings available:	Friday, February 18, 8:30am
Student rankings due:	Friday, February 18 at 12:00pm SHARP
Placements announced:	Monday, February 21
Student Placement letters with details available:	Monday, February 28

EMPLOYMENT DETAILS

After the employers have been advised of the placement results, students will be provided with a confirmation letter directing them to contact their employer for such details as ***start & finish dates, salary, immediate supervisor's name, dress code*** etc. This letter can be picked up at the office of Co-op Education and Career Services on the above specified date.

CO-OP WORK TERM POLICY

Students may not register in any type of course, or participate in any type of extra curricular activity that would interfere with their work placement responsibilities. The only exception to this is if the student makes special arrangements and obtains permission from their employer in advance.

F. Faculty of Education Thesis Approval

Sylvia Allison
07/20/99 09:34 AM

To: Karen Roland/University of Windsor@University of Windsor
cc: Larry Morton/University of Windsor@University of Windsor, "Erika Kuendiger" <erika@server.uwindsor.ca>
Subject: Thesis petition

Dear Karen,

I am pleased to advise that your thesis petition has been approved by the Graduate Committee of the Faculty of Education.

I apologize for not sending this message to you earlier although I did confirm the approval verbally a couple of weeks ago.

Congratulations and much success in completing your thesis.

Sylvia Allison
Graduate Secretary
Faculty of Education
Ext. 3804

G. Letter to Inform

July 1999

Dear Student Participant:

I am a graduate student enrolled at the University of Windsor Faculty of Education Master of Education program, and I am employed by the University of Windsor as a Co-operative Education Coordinator. I am conducting a research study which will provide the basis for my master's thesis, Dr. Larry Morton is my Faculty Advisor.

The intent of this study is to examine the level of career-clarity or decisiveness students enter university with, to see if the intervention of participating in a co-operative education program has an impact on this level of career-clarity, and if this impact is linked to student persistence or retention rates. It is hoped that this information will ultimately benefit the university student by focusing attention on educational strategies like co-operative education that work toward preparing the student for their future upon graduation.

The study will involve voluntarily completing a general student information sheet (attached), and two assessment inventories: The Career Decision Scale (10 minutes), and the Vocational Preference Inventory (10-15 minutes). I will request all voluntary participants to take the 10 minute Career Decision Scale Inventory again in April 2000. The results of the pretest/posttest Career Decision Scale scores will be compared to student academic performance measured at the end of the fall and winter academic semesters.

All materials will be kept strictly confidential. No information will be released that may identify any participant in this study. Please note, if at any time a participant in this study has any concern(s) of an ethical nature, they are advised to contact the Chair of the Ethics Committee, at 519-253-4232, Ext 3800.

Please sign and date both copies of the General Student Information Sheet, and keep a copy for your records. Please accept my warmest thanks for your agreement to participate in this study. I am not aware of any risk associated with this research. If you have any questions or concerns, please contact me at any time before, during, or after the research has been completed. Although you are encouraged to participate, you may withdraw from the study at any time.

Sincerely,
Karen Roland, 519-253-3000 ext. 3562

H. General Student Information Sheet *(two copies: one for participant, one for researcher)*
Thank you for taking the time to participate in this research study. Please complete the following information sheet and the Career Decision Scale and Vocational Preference inventory attached, carefully.

Name: _____
please print (last, first, initial)

Student ID #: _____

Gender: ☐ **Male** ☐ **Female** ***Age:*** _____

Faculty: Please check appropriate box:

☐ **Business Administration** ☐ **Engineering**

Participation in Co-operative Education (please check only the appropriate box(es):

I have applied and been admitted to the Co-op Option of my Program ☐

I have applied and have not been admitted to the Co-op Option of my Program ☐

I plan to reapply to the Co-op Option of my Program this September 1999 ☐

I have not applied, and do not plan to apply to the Co-op Option of my Program ☐

☐ ***I have current part-time employment*** ☐ ***I plan to work part-time during school***

My living accommodations during the school year will be:

☐ **At home (Windsor/Essex County)** ☐ **Residence** ☐ **Off Campus**

Community Involvement *(eg. clubs, organizations, special events, fund raising):*

☐ **Past** ☐ **Present (while at school)**

Athletic/Sports Involvement *(eg. teams, coaching, special events, tournaments):*

☐ **Past** ☐ **Present (while at school)**

Please sign and date below to confirm your agreement to participate in this research study, and to grant your permission for me to review your Fall 1999, and Winter 2000, semester grades:

_____ _____
Signature **Date**

I. Career Decision Scale, (CDS),Third Revision, Sample Questions

Shown below is a sample of the questions contained in the Career Decision Scale (Third Revision) as they relate to comments people commonly make about their educational and occupational plans (Psychological Assessment Resources, Inc.):

Sample Question #1

I have decided on a major and feel comfortable with it. I also know how to go about implementing my choice.

Sample Question #2

...I haven't given much thought to choosing a career. I feel lost when I think about it because I haven't had many experiences in making decisions on my own and I don't have enough information to make a career decision now.

Sample Question #3

I know what I'd like to major in, but I don't know what careers it can lead to that would satisfy me.

(Source: Psychological Assessment Resources, Inc. (1987) Career Decision Scale (third revision) [Manual] . Osipow, S. H.)

J. Vocational Preference Inventory (VPI)

The Vocational Preference Inventory (VPI) is an inventory of feelings and attitudes about different kinds of work. Individuals are asked to indicate interest, disinterest, or indecision concerning a list of 160 various occupations ranging from criminologist to masseur/masseuse.

Shown below is a partial list of occupations:

Criminologist
Detective
Humorist
Meteorologist
Lawyer
High School Teacher
Physician
Juvenile Delinquency Expert
Speech Therapist
Marriage Counsellor
Cashier
School Principal
Flight Attendant
Banker
Clinical Psychologist
Mail Carrier
Social Science Teacher
U.N. Official
Director of Welfare Agency
College Professor
Ticket Agent
Personal Counsellor
Truck Driver
Vocational Counsellor
Sales Clerk
Funeral Director
Insurance Clerk
Maseur/masseuse

(Source: Psychological Assessment Resources, Inc. (1985) Vocational Preference Inventory . (1985 revision) [Manual] . Holland, J.L.)

REFERENCES

Barbeau, M., Bruce, I., Clake, J., Morgan, J., Patry, R., & Porter, M. (1997) . The role of the university with respect to enrolments and career opportunities, admission policies, continuing education and community colleges. Ottawa, ON: Association of Universities and Colleges of Canada.

Barlow, M., & Robertson, H. (1994) . Class warfare: The assault on Canada's schools. Toronto, ON: Key Porter Books Limited.

Bentley, T. (1996) . The new landscape of learning. New Statesman, 127, (Special Supplement: Lifelong learning), IV(1).

Bercuson, D. J., Bothwell, R., & Granastein, J. L. (1997) Petrified campus: The crisis in Canada's universities. Toronto, ON: Random House of Canada.

Blank, W. E. Authentic Instruction. In Blank, W. E., & Harwell, S. (Eds.) . (1997) . Promising practices for connecting schools with the real world. (pp. 15-21) . Tampa, FL: University of South Florida.

Bloom, M. (1991) . Profiles of partnerships, business-education partnerships that enhance student retention. (Report No. 70-91-E/F) . Ottawa, ON: Conference Board of Canada Report from the National Business and Education Centre.

Boyd, V., Hunt, P., Hunt, S., Magoon, T., & VanBrunt, J. (1997) . A low-level career testing and interpretation intervention (Research Rep. 18 -97) . College Park, MD: University of Maryland, College Park, Counselling Center.

Brewer, D., & Gray, M. (1997) . Connecting college and community in the new economy? An analysis of community college faculty-labor market linkages. University of California at Berkeley, CA: National Center for Research in Vocational Education.

Carrington, J. (1999, March 6) . Business leaders stress link between higher education and economic well-being. University of Windsor Daily News. [On-line], Available Internet: http://www.uwindsor.ca/arts_and_minds.

Chapman, C. (1993) . If the shoes fits...how to develop multiple intelligences in the classroom. Palantine, IL: IRI/Skylight Publishing, Inc.

Chyczij, M. A. (1995) . The relationship of practical attributers to academic aptitude and employment related experience (Doctoral dissertation, University of Toronto, 1995). National Library of Canada, 0525. ISBN 0-612-02730-9.

Dewey, J. (1938) . Experience & education. New York: Collier.

Drummond, R. J. (1986) . Vocational Preference Inventory. In D.J. Keyser, & R.C. Sweetland (Eds.), Test critiques, Volume V. Kansas City, MO: Test Corporation of America.

Eby, A. (1999, March 6) . Skilled-trades shortage creates opportunities. The Toronto Star, p. H13.

Fisher, D., Rubenson, K., & Schuetze, H. (1994) . The role of the university in preparing the labour force. Vancouver, BC: University of British Columbia, Centre for Policy Studies in Education.

Gardner, H. (1983) . Frames of mind, the theory of multiple intelligences. New York: Basic Books, A Subsidiary of Perseus Books, L.L.C.

Gardner, H. (1991) . The unschooled mind, how children think & how schools should teach. New York: Basic Books, A Subsidiary of Perseus Books, L.L.C..

Gardner, H. (1997) . Multiple intelligence as a partner in school improvement. Educational Leadership, 55(1), 20 - 21.

Grubb, W. N., & Badway, N. (1998) . Linking school-based and work-based learning: The implications of Laguardia's co-op seminars for school-to-work programs. Berkeley, CA: National Center for Research in Vocational Education.

Harwell, S., & Blank, W. (1997) . Connecting high school with the real world. In Blank, W.E., & Harwell, S. (Eds.), Promising practices for connecting schools with the real world. (pp. 1-4). Tampa, FL: University of South Florida.

Hellriegel, D, Slocum, J. W. Jr., & Woodman, R. W. (1992) Organizational behavior (6th ed.) St. Paul, MN: West Publishing Company.

Hoerr, T. R. (1996) Implementing multiple intelligences: The new city school experience. Bloomington, IN: Phi Delta Kappa Educational Foundation.

Holland, J. L. (1973) . Making vocational choices: A theory of careers. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Holland, J.L. (1985) . Vocational preference inventory, professional manual, 1985 edition. Odessa, FL: Psychological Assessment Resources, Inc.

Kennedy, D. (1997) . Academic duty. Cambridge, MA: Harvard University Press.

Landgren, C. R. (1993) . Show me what I should know! Active, contextual learning on the job - A review essay. Economics of Education Review, 12(3), 267-270.

Lewington, J. (1999, March 4) . School to work: Bridging worlds. The Globe and Mail, pp. C1-C2.

Livengood, J. M. (1992) . Students' motivational goals and beliefs about effort and ability as they relate to college academic success. Research in Higher Education, 33(2), 247-61.

Lucas, C. J. (1996) . Crisis in the academy, rethinking higher education in America. New York: St. Martin's Press, Scholarly and Reference Division.

Luzzo, D. A. (1993, October) . Evaluating the relationship between college students' vocational congruence, academic success, and career maturity: Career counselling implications for future directions. Paper presented at the 1993 annual meeting of Mid-Western Educational Research Association, Chicago, IL.

Maddox, T. (Ed.) . (1997) . Tests, a comprehensive reference for assessments in psychology, education, and business, fourth edition. Austin, TX: PRO-ED, Inc.

Mann, A. W. (1994) . Effects of co-operative education at the university baccalaureate level. Unpublished master's thesis, University of Guelph, Guelph, Ontario, Canada.

Maryland Longitudinal Study Steering Committee, University of Maryland College Park . (1989) . Career development and its academic correlates (Maryland Longitudinal Study Research Highlights, Research Rep. no. 12) . College Park, MD: University of Maryland, College Park.

Maryland Longitudinal Study Steering Committee, University of Maryland College Park . (1990) . The undergraduate experience of students who graduate (Maryland Longitudinal Study Research Highlights, Research Rep. no. 14) . College Park, MD: University of Maryland, College Park.

McKillop, A.B. (1994) . Matters of mind: The university in Ontario, 1791-1951. Toronto, ON: University of Toronto Press.

Ministry of Education and Training . (1996) . Excellence in education: High school reform (A discussion paper, 96-108) . Toronto, ON: Queen's Printer for Ontario.

Osipow, S. H. (1968) . Theories of Career Development. New York: Appleton-Century- Crofts.

Osipow, S. H. (1986) . Manual for Career Decision Scale. Odessa, FL: Psychological Assessment Resources, Inc.

Peterson, S. L., & delMas, R. C. (1996, April) . Effects of career-decision-making self-efficacy on the retention of underprepared adults: A path analytic study of student persistence . Paper presented at the annual meeting of the American Educational Research Association, New York.

Psychological Assessment Resources, Inc. (1999) Vocational Preference Inventory (VPI). [On-line] . Available Internet: http://www.parinc.com/career/VPI109a.html.

Santa Rita, E. (1992) . Educational advising for student retention . Bronx, NY: Bronx Community College Department of Student Development.

Scaglione, J. (1997) . The real world. In Blank, W.E. & Harwell, S. (Eds.), Promising practices for connecting schools with the real world. (pp. 7-13). Tampa, FL: University of South Florida.

Schofield, J. (1999) . Learning on the front lines. Maclean's, Canada's weekly newsmagzine, 112(46), 90-94.

Sheasby, M. (1991) . The nature of teaching and learning by high school students in the workplace. Unpublished doctoral dissertation, University of Toronto, Toronto, Ontario, Canada.

Slaney, R. B. (1985) . Career Decision Scale. In D.J. Keyser, & R.C. Sweetland (Eds.), Test critiques, Volume II. Kansas City, MO: Test Corporation of America.

Stasz, C. (1997) . Do employers need the skills they want? Evidence from technical work. Journal of Education and Work, 10(3), 205-223.

Stasz, C., & Brewer, D. J. (1998) . Work-based learning: Student perspectives on quality and links to school. Educational Evaluation and Policy Analysis, 20(1), 31-46.

Stasz, C., Kaganoff, T., & Eden, R. A. (1994) . Integrating academic and vocational education: A review of the literature, 1987-1992. Journal of Vocational Education Research, 19(2), 25-72.

Sternberg, R. J. (1986) . Intelligence applied, understanding and increasing your intellectual skills. Orlando, FL: Harcourt Brace Jovanovich, Inc.

Sternberg, R. J., & Wagner, R. (1986) . Practical intelligence, nature and origins of competence in the everyday world. New York: Cambridge University Press.

Sternberg, R. J. (1996) . Successful intelligence, how practical and creative intelligence determine success in life. New York: Simon & Schuster.

Van Gyn, G., Cutt, J., Loken, M., Ricks, F. (1997) . Investigating the educational benefits of co-operative education: A longitudinal study. Journal of Co-operative Education, 32,(2), 70-85.

Wagner, T. (1995) . What's school really for anyway? And who should decide? Phi Delta Kappan, 76(5), 393-398.

Weiss, K. (1982, September) . Education and work: The role of postsecondary institutions . Statement to the National Commission on Excellence in Education at a Public Hearing, Denver, CO.

Westberry, R. (1997) . Integrating academic and vocational education. In Blank, W.E. & Harwell, S. (Eds.), Promising practices for connecting schools with the real world. (pp. 71-77). Tampa, FL: University of South Florida.

Yongue, I. T., Burton, J. K., & Todd, R. M. (1981) . The effects of didactic classroom instruction versus field exposure on career maturity. Journal of Vocational Behavior, 19,(3), 369-373.

Yongue, I. T., Burton, J. K., & Todd, R. M. (1983) . Student attitudes toward field vs. Didactic instruction in career education. Journal of Experimental Education, 51,(3), 142-144.

Young, J. & Levin, B. (1998) . Understanding Canadian schools, an introduction to educational administration (2nd ed.) . Toronto, ON: Harcourt Brace & Company Canada, Ltd.

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